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ABSTRACT

Teachers who have been trained to work with normal young children (early childhood certification) or with older disabled children (special education certification) are unprepared to assume the multiple responsibilities of the teacher of preschool disabled children. Prior to the 1979-1980 academic year, few (if any) formal on-going inservice (or preservice) programs existed for this population of educators. Therefore, a project was proposed and subsequently funded at New Mexico State University to provide the necessary training. The Federal funding agency, the Bureau of Education for the Handicapped--Handicapped Personnel Preparation, stipulated that the Discrepancy Evaluation Model (DEM) be used to evaluate the project. This evaluation model demands that internal staff members continuously gather input, process, and output information and that decisions (e.g., to go to the next stage; to recycle) be based upon discrepancies regarding desired and obtained outcomes. The purpose of this paper is to report the results of the inservice training project in terms of DEM conventions.
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Evaluation of a Competency-Based Inservice Training
Program for Personnel Serving Disabled
Preschoolers

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Abstract

Habilitation programs for disabled infants, toddlers, and preschoolers (0-5) seem justified from at least the following six points-of-view (Stile & Stile, 1979): (a) prevention of failure during subsequent school years, (b) parent programming, (c) learning, (d) social change, (e) educational economics, and (f) legal rights. As Karnes (1975) has pointed out, teachers who have been trained to work with normal young children (early childhood certification) or with older disabled children (special education certification) are unprepared to assume the multiple responsibilities of the teacher of preschool disabled children. Such a teacher is at once "a diagnostician, curriculum developer, manager and team leader, parent worker, trainer of volunteers and paraprofessionals, and public relations expert" (p. 81). In addition, this individual is also a teacher of a unique population of children (Hirshoren & Umansky, 1977).

Prior to the 1979-1980 academic year, few (if any) formal on-going inservice (or preservice) programs existed for this population of educators. Therefore, a project was proposed and subsequently funded at New Mexico State University to provide the necessary training. The Federal funding agency (BEH) stipulated that the Discrepancy Evaluation Model (Yavorsky, 1976) be used to evaluate the project. This evaluation model (DEM) demands that internal staff members continuously gather input, process, and output information and that decisions (e.g., to go to the next stage; to recycle) be based upon discrepancies regarding desired and obtained outcomes (Worthen & Sanders, 1973). The purpose of the present paper is to report the results of the NMSU inservice training project in terms of DEM conventions.

Evaluation of a Competency-Based Inservice Training
Program for Personnel Serving Disabled
Preschoolers

Introduction

As Karnes (1975) has pointed out, teachers who have been trained to work with normal children (early childhood certification) or with older handicapped children (special education certification) are often unprepared to assume the multiple responsibilities of the teacher of preschool handicapped children. Such a teacher "is often a diagnostician, curriculum developer, manager and team leader, parent worker, trainer of volunteers and para-professionals, and public relations expert" (p. 81). In addition, this individual is also a teacher of a unique population of children (Hiroshoren & Umansky, 1977).

Prior to the 1979-1980 academic year, few (if any) formal, on-going mechanisms existed for the delivery of inservice training for personnel serving New Mexico's preschool aged (0-6) handicapped population. Therefore the project described in this paper was proposed to the Bureau of Education for the Handicapped - Handicapped Personnel Preparation (BEH-HPP) in October, 1978.

The project target population consisted entirely of a cadre of leadership personnel recruited from New Mexico's 32 counties who (a) received inservice training in five-week summer sessions in 1980 and 1981 at New Mexico State University (NMSU) in Las Cruces, and (b) performed optional follow-up field-based studies. Selection of trainees was partially based upon the expressed willingness of the trainees to provide local inservice training beyond the life of the present project.

The tricultural thrust of the project was retained commensurate

with demographics of the Southwestern region.

In keeping with the demographics of the Southwestern region, the project provided a tricultural emphasis throughout the program. This was accomplished through guest lectures/workshops and inclusion of appropriate trilingual/tricultural materials in the Project Materials Collection.

The project used a competency-based training approach (see Figure 3). Needs assessment data gathering and trainee record-keeping was facilitated via the Student Competency Checklist (Stile, 1978).

Procedures

Figure 4 graphically describes the seven major steps involved in the inservice training model. These steps as well as the major project tasks which supported and complemented the inservice training efforts are described in the following narrative.

Establishment of traineeships. Trainee in-state tuition and stipend dollar amounts were established. The traineeships consisted of a \$75.00-a-week stipend for living expenses plus paid in-state tuition for six graduate credit hours.

Information dissemination/recruitment. The bulk of the summer trainee recruitment efforts were carried out via project-developed brochures and posters. During each of the two project recruitment efforts, 1,000 brochures and 200 posters were distributed (i.e., posted, hand-delivered, and/or mailed) to potential trainees through such agencies as New Mexico's 89 local school districts, state-operated residential schools, local offices of the Division of Family Services, and Head Start programs. Additional information dissemination and/or recruitment efforts included

personal contact at professional conferences and state-wide news releases.

Selection of trainees. A project advisory board consisting of a parent of a handicapped child, the director of the local community-based infant and preschool programs for the handicapped (Open Door¹), the director of the NMSU Office of Indian Affairs, a professor of speech pathology, and a professor of educational administration assisted the project staff in the trainee selection process. Trainees were selected on the basis of the following four criteria:

- (1) Current employment in a preschool program serving handicapped children.
- (2) Acceptance by the NMSU Graduate School.
- (3) Signed agreement to provide service in the home county or region (e.g., community screening).
- (4) Stated need for training.

Table 1 presents recruitment and selection data for the summer 1980 campus-based inservice training efforts (NMSU).

Table 1
Recruitment and Selection Data: Year 1

Mailings	N of Formal Applications Received	N of Candidate Pool	N of 1980 Trainees	N of Counties Represented by Trainees/Cadre of Trainers
1,000 posters	44	32	14	14
200 posters				

¹Open Door, Inc., is a local community-based program which operates replication sites for the University of Wyoming's Infant Stimulation Program (WISP) and the University of Illinois' Precise Early Education for Children with Handicaps (PEECH) program. These programs are housed within the NMSU College of Education and provide practicum experiences for summer trainees.

Needs assessment. Immediately upon selection, trainees were provided with a short-form needs assessment instrument. This form provided the project staff with perceived training needs within the project's seven major curricular areas. For example, the spring 1980 needs assessment led to the inclusion of a session on grantsmanship and a greater emphasis upon parent involvement than had been originally planned.

Development of coursework. The summer coursework was developed around Stile's Student Competency Checklist (1978). The three-hour lecture class (SPED/ECED 550) and three-hour practicum (SPED 501) provided knowledge and skills within the following seven broad areas of competency.

- (1) The development and use of an individualized educational program (IEP).
- (2) Curriculum planning.
- (3) The developmental tasks approach.
- (4) Classroom/instructional management.
- (5) Behavior management.
- (6) Instructional materials.
- (7) Miscellaneous background information/skills (e.g., grantsmanship, identification and reporting of child abuse, bilingual/bicultural considerations, etc.).

Training. Campus-based inservice training was delivered during two five-week summer sessions (1980 and 1981). It is estimated that (including outside assignments), the number of training hours equaled 200. The total hours may be broken down as follows:

- (1) In-class lectures/workshops (two hours daily for five weeks = 50 hours)
- (2) "Hands-on" experience in PEECH/WISP programs (two hours daily for five weeks = 50 hours).
- (3) Outside assignments (e.g., abstracts over very recent professional literature, etc.) (four hours daily for five weeks = 100 hours).

1.0 BROAD AREA OF COMPETENCY	2.0 SOURCE	3.0 INSTRUCTIONALLY FEASIBLE SPECI- FIC COMPETENCY	4.0 VALIDITY ESTA- BLISHED YES/NO	5.0 HOW ACQUIRED	6.0 PERFORMANCE OBJECTIVES
1.1 Developing in- dividualized education pro- grams (IEPs)	2.1 Crutcher, C.E., & Hofmeister, A.M., 1975	3.1 Writing short term objectives based on skill assessment.	Yes	5.1 On-site inservice training. 5.2 Summer campus- based inservice training with follow-up.	6.1 Given information on five specific skill deficits for a particular preschool handi- capped child, the practicum trainee will develop five short term objec- tives according to the "ABCD for- mat" with 100% accuracy.

Figure 3. Competencies for Personnel Serving the Preschool Handicapped

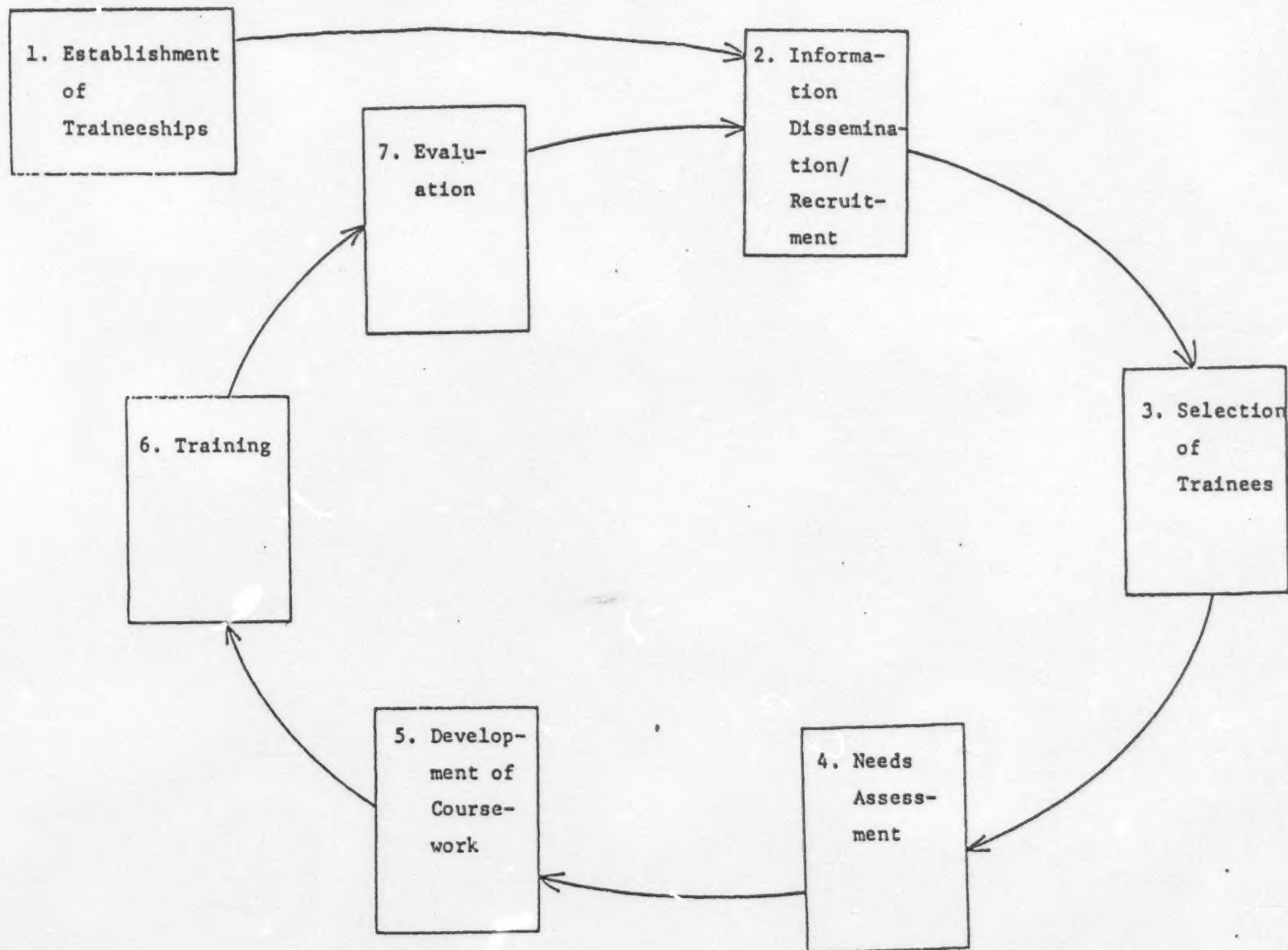


Figure 4. Major steps in the university-based inservice training model

Evaluation

The Discrepancy Evaluation Model (DEM) of Malcolm Provus (Yavorsky, 1976) is designed to generate information relative to program improvement and assessment. By comparing program performance with projected goals, DEM identifies any difference (discrepancy) which exists between what is and what should be. The program design (which details expected inputs, processes and outputs) becomes the standard of excellence (what should be) against which program performance is subsequently compared. To the extent that a given program reaches or surpasses its specified desirable outputs, the program may be judged successful.

Table 2 outlines the project's evaluation plan. The plan follows the DEM convention in that it first specifies the evaluation question being addressed, then identifies instruments to be used, cites their developmental status, and projects the date on which the information will be available.

Relevant to the project's evaluation plan, instruments were developed by the project staff to ascertain (a) the immediate impact of the training, (b) the relevance of program content to job requirements, and (c) transfer of competencies from the training environment to work environment. In evaluating the relevance of program content, for example, six months after the completion of training, former trainees were asked via questionnaires and/or interview guides whether they felt they were now meeting the needs of their preschool hearing impaired students. As Smith and Corbett (1976) have suggested, this type of comparison (or discrepancy analysis) can indicate (a) competencies taught but used infrequently, (b) critical competencies not included in the training, and (c) the percentage of trainees who have applied (most) program competencies to their jobs.

Results

The program design, shown in Table 3, describes major evaluation questions according to DEM convention. In DEM, data gathering for revision purposes is simply a matter of determining whether a discrepancy exists between what is (achievement) and what should be (outputs). Results are presented in eight subsections which relate to the outputs listed in the last column of Table 3 for the two years the inservice training program was in place.

Results for year 1980-81.

1. DEM output 1. Recruitment and screening efforts led ultimately to the selection of 14 trainees by the Project Advisory Board. The desired output was achieved since (a) 100% of the trainees were selected on the basis of previously stated criteria, and (b) the trainees represented 14 separate counties.

2. DEM output 2. Summer trainees evaluated in the training on a weekly basis using a five point Likert Scale. Trainees were asked to rate each weekly (i.e., five days) of training in the following five ways:

1. overall degree of interest (1-5)
2. overall value (1-5)
3. overall information of the audiovisual materials (1-5)
4. informational value of handouts (1-5)
5. degree to which the training provided a better basis for working with handicapped preschoolers (1-5)

Based upon the trainees' ratings over the above five areas of concern, the program successfully achieved the desired output. Trainee ratings surpassed the 80% criterion for four of the five weeks (80% of the sessions). These data are presented graphically in Figure 5.

3. DEM output 3. This output was concerned with the levels at which the 14 trainees scored on an objective-referenced posttest over the seven broad

Table 2
Evaluation Plan, AY 1981-1982

Evaluation Question (5.1)	Design Reference (5.2)	Instrument (5.3)	Instrument Status (5.4)	Date Information Available (5.5)
<u>5.1.1</u> How do project trainees rate the effectiveness of the competency-based training program?	Processes 4.2.1 and 4.2.2 Output 4.3.2	<u>5.3.1</u> Project Likert Scales	Instrument developed by project staff, 5/31/80.	Aug. 14, 1981
<u>5.1.2</u> At what level do trainees score on objective-referenced tests of knowledge-based project competencies?	Processes 4.2.1 and 4.2.2 Output 4.3.3	<u>5.3.2</u> Objective-referenced pretest-posttest	Objective-referenced pretest/posttest developed by project staff, 5/31/80.	Aug. 14, 1981
<u>5.1.3</u> At what level do trainees rate relative to demonstration of skill-based competencies in practicum setting?	Process 4.2.2 Output 4.3.4	<u>5.3.3</u> Observation Rating Scale (evaluation of practicum interactions between trainees and preschool handicapped children).	To be developed by project staff by 3/15/81 (see Milestone 2.12).	Aug. 14, 1981
<u>5.1.4</u> What is the impact of the competency-based training program on preschool handicapped children (practicum setting)?	Process 4.2.2 Output 4.3.6	<u>5.3.4</u> Behavioral Characteristics Progression (BCP) and other developmentally sequenced/criterion-referenced instruments/preschool IEP's.	Commercially available, professionally validated instruments/PEECH/WISP IEP's	July 1980
<u>5.1.5</u> How do cadre of trainers/former trainees rate their subsequent performance in home programs/in-service training?	Process 4.2.4 Output 4.3.7	<u>5.3.5</u> Project Likert Scales.	To be developed by project staff by 4/1/81	May 1, 1982
<u>5.1.6</u> How do attendees rate effectiveness of the two regional workshops?	Process 4.2.5 Output 4.3.9	<u>5.3.6</u> Project Likert Scales	To be developed by project staff by 11/1/81.	11/1/81 4/15/82

Table 3

Program Design, AY: 1980-1981; AY: 1981-82

Inputs	Process	Outputs
1. Project Advisory Board 2. Project review of recent legislative mandates/state rules and regulations/applied research data for purposes of revising <u>Student Competency Checklist</u>, etc. 3. Project trainees' feedback via <u>Student Competency Checklist</u>.	1. Summer Institute: competency-based training for teachers of preschool handicapped children (five-week classroom instruction). 2. Summer Laboratory: four-week "hands-on" training to NMSU's preschool handicapped summer program. 3. Field-based special problems follow-up.	1. At least 14 trainees (representing 14 of New Mexico's 32 counties) selected on the basis of project eligibility criteria as outlined in recruitment brochure. 2. At least 80% of the trainees rate training program at 80% (level four on a five-point Likert Scale) over all elements of each training session. (80/80 criterion) 3. At least 80% of campus-based trainees score 80% or better on all objective-referenced tests in seven broad areas of training. (80/80 criterion) 4. Project staff will observe improvement in trainees' skill levels as they interact with preschool handicapped children in a laboratory situation. (80% will reach criterion on 80% of areas on practicum observation instrument)

Table 3 (cont.)

Program Design, AY: 1980-1981

Inputs	Process	Outputs
		5. At least 80% of trainees contract to do follow-up special study in at least one of the seven broad competency areas. 6. At least 80% of preschool students achieve objectives in at least two areas as identified on laboratory IEP's. 7. At least 80% of the trainees will provide inservice training to their home programs and/or service to their own or contiguous counties. These activities will be based upon the summer inservice training program.² 8. At least 80% of the trainees will directly apply the NMSU competencies in their own programs. ²Outputs 7 and 8 were added based on feedback from the external evaluator prior to summer 1980 training.

areas of competency described at the beginning of this paper. Figure 6 reveals that 100% of the trainees scored 80% or better on the posttest, thus achieving the desired output. Furthermore, 79% of the trainees scored 90% or better and trainee number ten achieved the 100% level.

Since the same objective-referenced test was administered to all 14 trainees on a pretest basis, it was also possible to evaluate output 3 relative to gain scores. Figure 6 graphically indicates that 100% of the scores improved on the second administration.

Another check on the pretest-posttest gain would be to employ a one-group pretest-posttest (Borg & Gall, 1974) and to compare the pretest and posttest means for statistical significance, using a t-test for correlated means. The obtained t value of 15.66 for 13 degrees of freedom (13 d.f.) was statistically significant beyond the .001 level or probability ($p < .001$). As Borg and Gall (1974) have pointed out, the one-group pretest-posttest design is appropriate when (as in the present project's five-week inservice training) the interval between the pretest and posttest is relatively short, thus minimizing threats to internal validity such as history and education and maturation.

4. DEM Output 4. The project staff and practicum personnel were unable to agree upon a valid and reliable observation instrument prior to the beginning of the summer 1980 inservice training and, therefore, this output was not measured. An observation instrument was adopted/developed prior to the summer 1981 training session and data regarding this output is reported below for the second year.

5. DEM Output 5. Twelve of 14 (86%) students contracted (i.e., presented approved proposals) to do a follow-up special study in their home programs

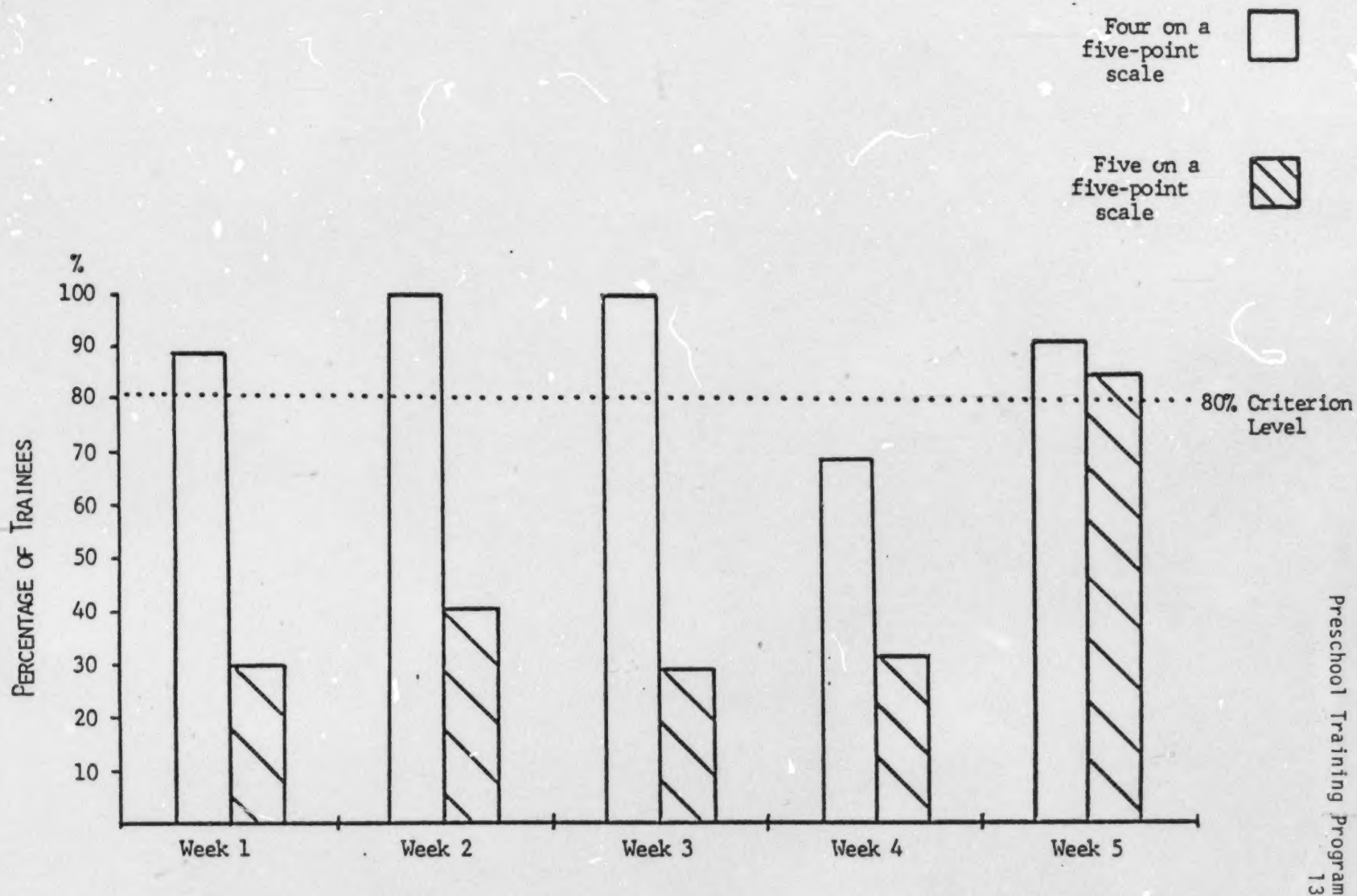


FIGURE 5. RATINGS BY TRAINEES OF WEEKLY UNITS OF WORK YEAR 1980-81

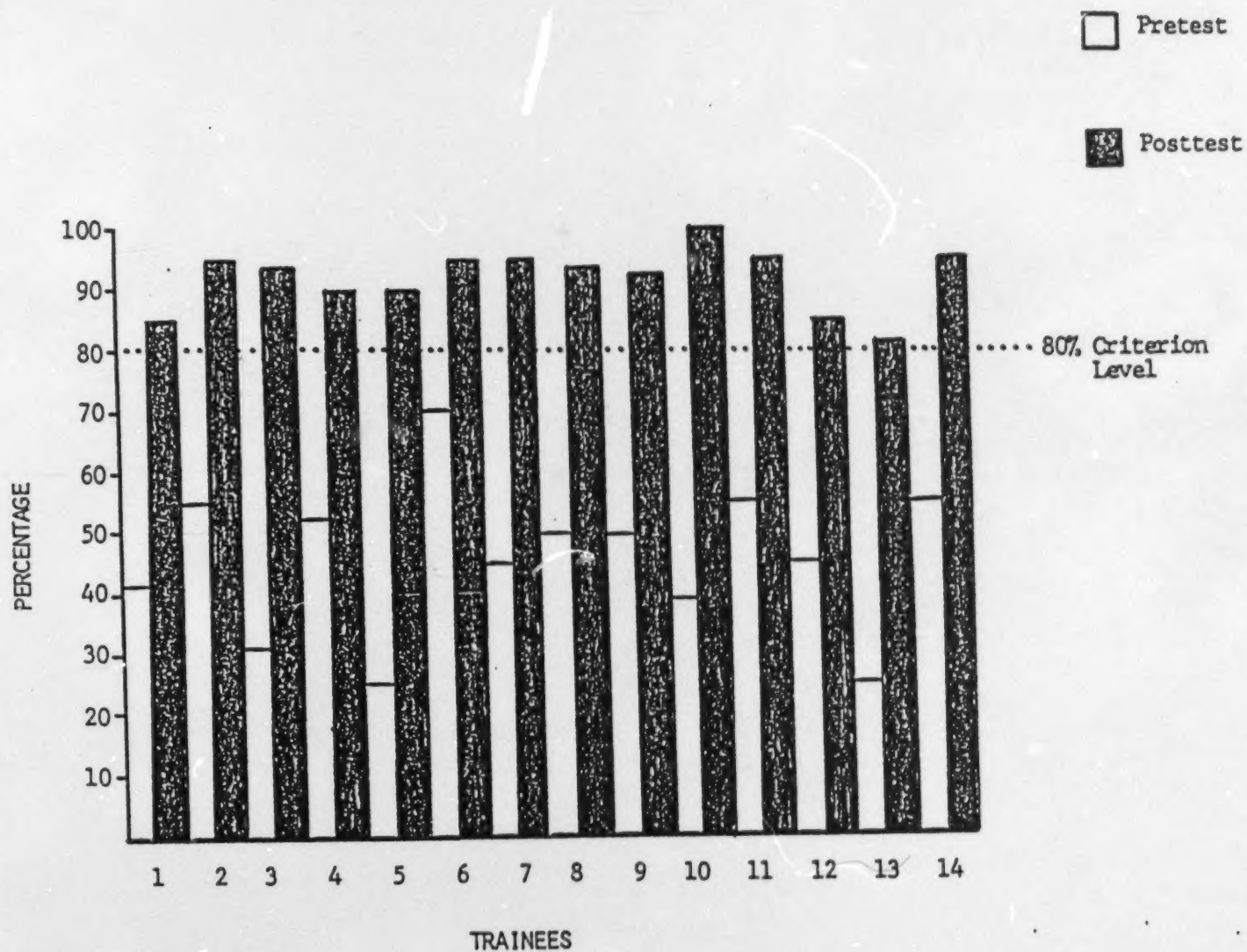


FIGURE 6. PERCENTAGE OF ACCURATE RESPONSES BY TRAINEES ON OBJECTIVE-REFERENCED PRE AND POSTTESTS YEAR 1980-81

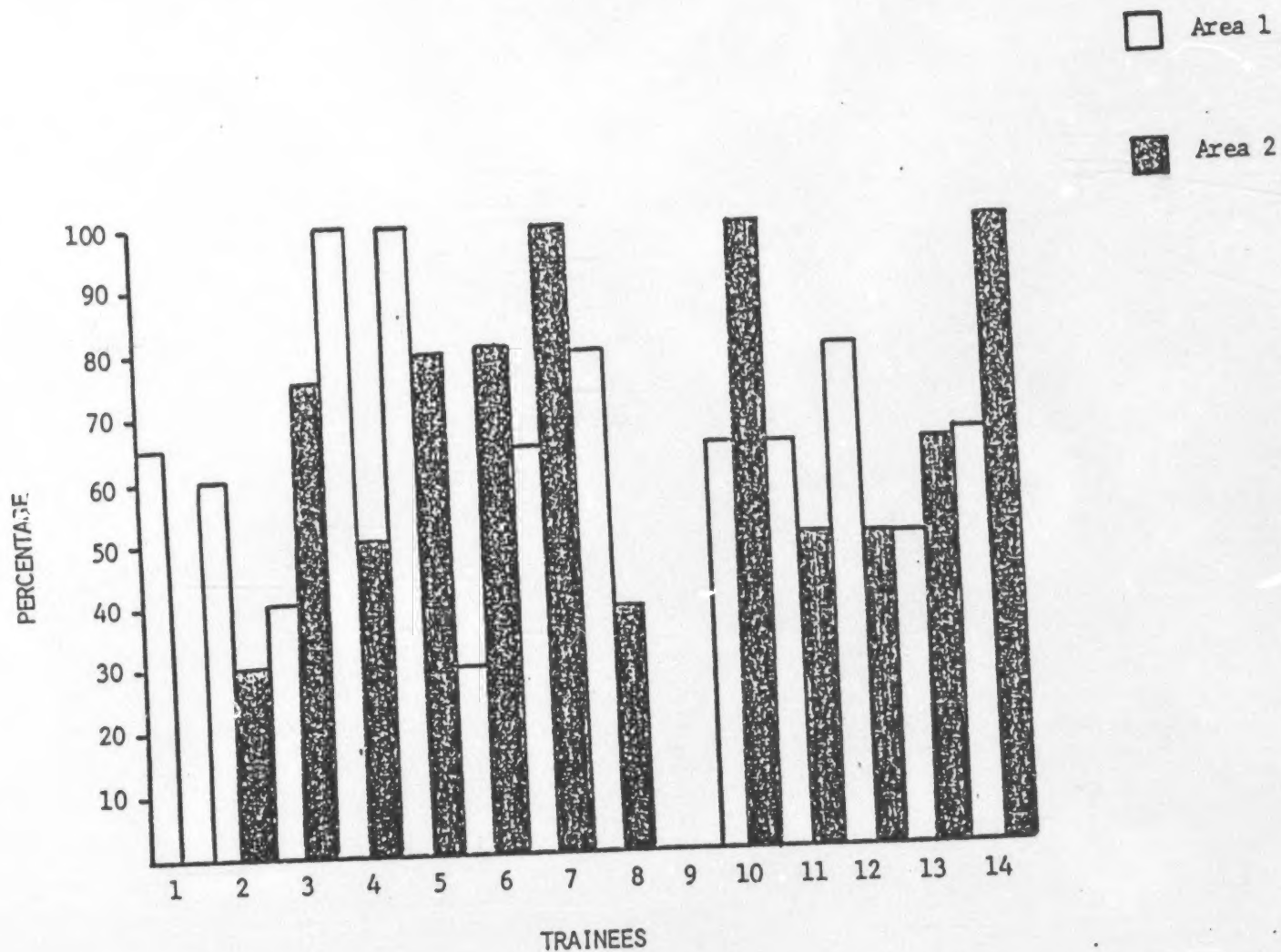


FIGURE 7. PERCENTAGE OF OBJECTIVES ACCOMPLISHED YEAR 1980-81

within the seven broad areas of training. To date, however, only six (43%) of these studies have been completed. Thus, although the stated criterion has already been surpassed, some proposed projects have not yet been initiated.

6. DEM Output 6. Each SPED 501 practicum participant was assigned at least one objective in each of two areas of the curriculum (e.g., language and fine motor) for their five weeks of individualized instruction with the PEECH and WISP students. Figure 7 indicates that the 80% criterion level was again surpassed (i.e., 86% of the students achieved objectives from the PEECH and WISP practicum IEP's in at least two areas of the curriculum).

7. DEM Output 7. Consumer output via a telephone survey and subsequent written correspondence with summer 1980 trainees indicated that 12 of 14 (86%) has provided inservice training and/or other types of service (e.g., community workshops, screenings) in their home or contiguous counties.

8. DEM Output 8. As with the previous output, no graphic display was developed for output 8. Data collected via a telephone survey indicated that 12 of 14 (86%) trainees had applied the NMSU inservice competencies in their own programs.

In summary, the stated criteria for six of the eight outputs were obtained or surpassed during the first 22 months of the project. Output 4 was not measured for the first wave of trainees due to lack of a satisfactory observation instrument.

Results of year 1981-82. Again, the DEM convention was used to gather data addressing the major evaluation questions in the last column of Table 3.

1. DEM Output 1. The Project Advisory Board again selected fourteen trainees. However, only nine of the 14 members represented new counties. Thus,

output 1 was only partially met for the second year since, although each trainee met the previously stated eligibility criteria, the nine additional counties were not represented in the final candidate pool.

2. DEM Output 2. Summer trainees evaluated the training on a weekly basis using a five-point Likert Scale. Trainees were asked to rate each weekly unit (i.e., five days) of training in the following five ways:

- (1) overall interest in the week's session;
- (2) overall value of the week's session;
- (3) overall value of the week's audio/visual;
- (4) information value of the week's handouts; and
- (5) perceived transferability of knowledge/skills to a preschool setting.

Based upon the trainees' ratings over the above five areas of concern, the program successfully achieved the desired output. Trainee ratings surpassed the 80% criterion for four of the five weeks (80% of the sessions). These data are presented graphically in Figure 8.

3. DEM Output 3. This output was concerned with the levels at which the 14 trainees scored on the objective-referenced posttest over the seven broad areas of training. One hundred percent of the second wave of trainees scored 80% or better on the posttest thus surpassing the desired output. Furthermore, 86% of the trainees scored 90% or better and trainee number six achieved 100% of the posttest. These data are presented graphically in Figure 9.

All participants improved from their pre-test scores. Pre-test scores ranged from 8% to 56% indicating that the students began training on content that was new to them. Participants' pre-to post-test gains ranged from 35 to 55 points. The high post-test scores indicated that the test questions closely matched the material covered during the five-week training session and that the participants learned the planned content. The significance

of the pre- to post-test scores was made through the use of a t-test for correlated means. The t value was 3.04 with 13 degrees of freedom and was statistically significant beyond the .01 level of probability ($P < .01$).

4. DEM Output 4. This output was not measured for the first wave of trainees. However, an observation instrument was developed prior to summer 1981 and at the conclusion of the training period, 100% of the trainees (14 of 14) had reached criterion relative to the direct instructional model and the 11 designated areas of classroom management. Thus, training was extremely effective in providing the participants with the necessary competencies to be successful classroom teachers of preschool handicapped children.

5. DEM Output 5. Only six of 14 (43%) second year trainees contracted to do follow-up special study work in at least one of the seven broad competency areas. All six (100%) who contracted to do follow-up special studies have completed the proposed studies. Completed studies have included the teaching of a course in early childhood special education at Eastern New Mexico University, the presentation of a series of workshops dealing with parent training, and the implementation of a school district-wide program for the prevention of child abuse and neglect.

6. DEM Output 6. Three levels of accomplishment were considered for this objective. These were:

1. Student achieves at least one objective in each of two areas.
2. Student achieves at least one objective in only one area.
3. Student does not achieve any objectives.

Only eight of 14 (58%) second year trainees reached criterion relative to this output (i.e., achievement of at least one objective in two areas of the practicum IEP). Of the fourteen preschool children who participated in the

Output 2

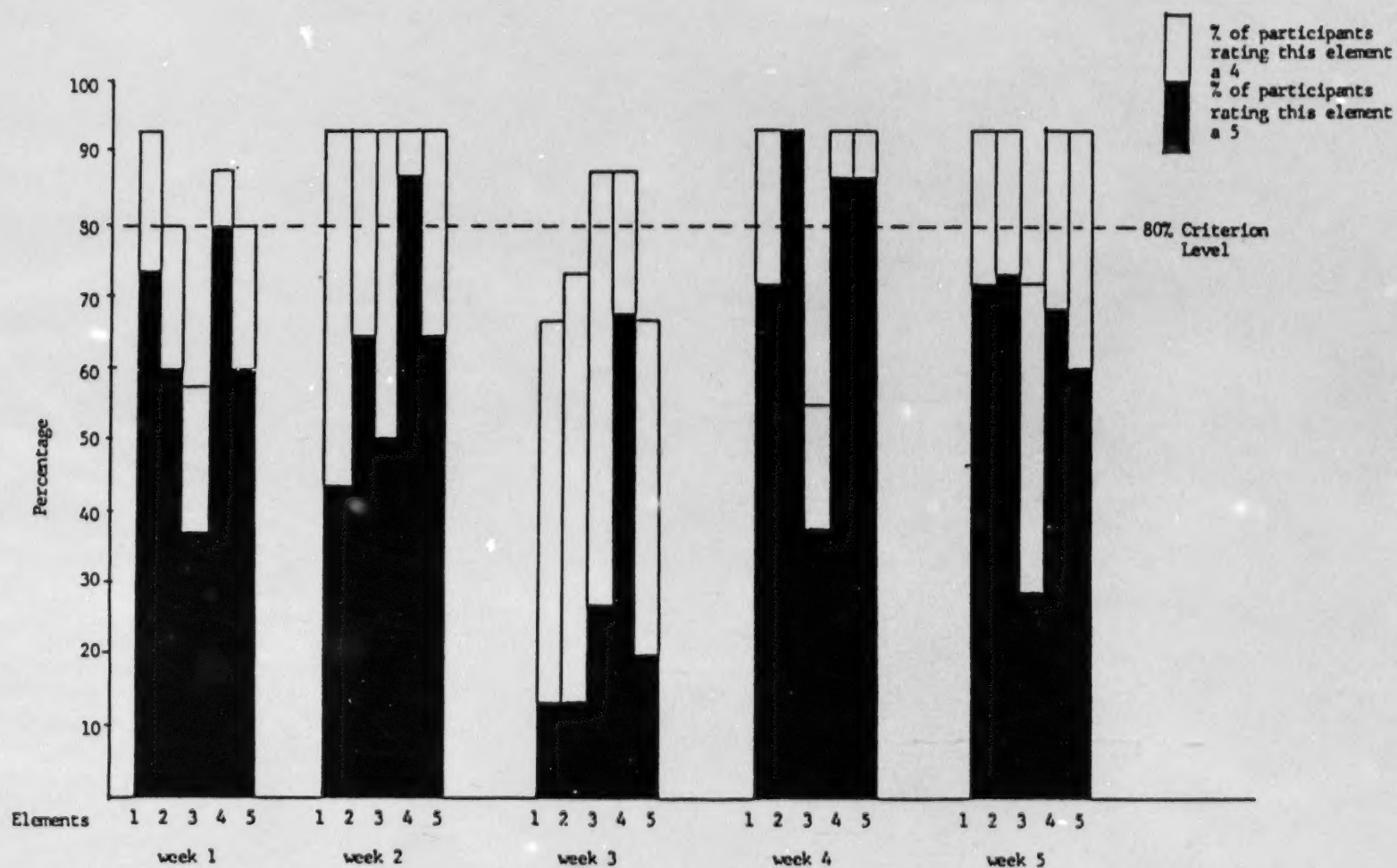


Figure 8. Percentage of Participants Rating 4 or 5 on Each Element of Weekly Sessions Year 1981-82

Output 3

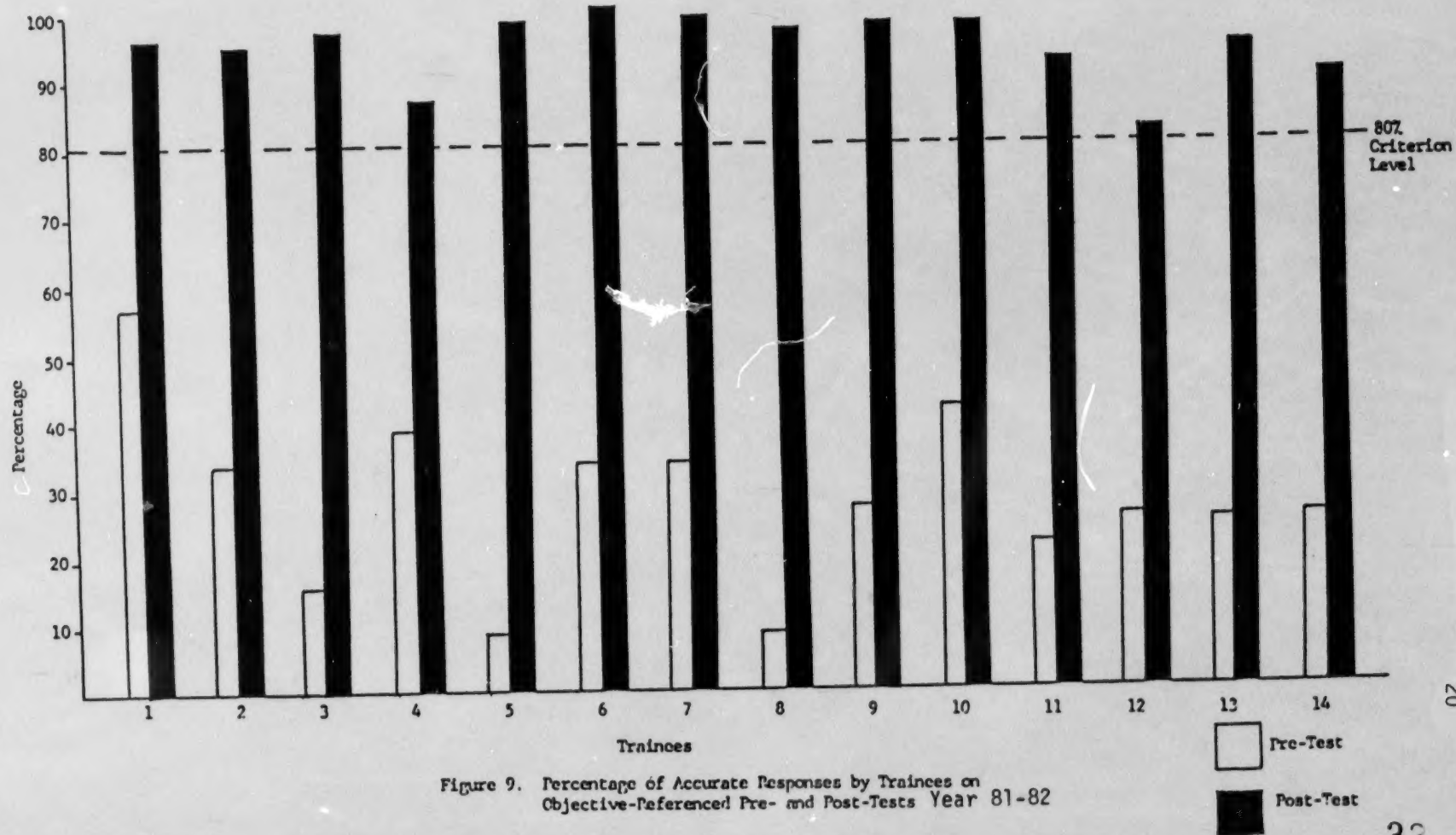


Figure 9. Percentage of Accurate Responses by Trainees on Objective-Referenced Pre- and Post-Tests Year 81-82

program, only 57% achieved at least one or more objectives in each of two areas. The 80% level of accomplishment was approached (79%) if categories (1) and (2) are added together. The proportions in each of the three categories are graphically depicted in Figure 10. It seems important that student attendance records be maintained for future training sessions in order that the effect of attendance on accomplishment can be monitored.

7. DEM Output 7. Consumer output via a telephone survey with summer 1981 trainees indicated that 7 of 14 (50%) had already provided inservice training and/or other types of service (e.g., community workshops or screenings) in their home or contiguous counties. An additional four of 14 (29%) indicated that they were planning to provide inservice training and/or other types of service in the future.

8. DEM Output 8. Data collected via a telephone survey indicated that 11 of 14 (79%) trainees had applied the NMSU inservice competencies in their own programs.

In summary, the stated criteria for four of eight outputs were obtained or surpassed relative to the recruitment, training, and follow-up with the second wave of trainees. It is important to note that stated criteria for output 4 was exceeded with 100% of the participants reaching instructional criteria. Although only four of eight outputs met the 80% criterion, one additional output approached criterion at the 79% level (Output 8).

Discussion

This document has described the major steps involved in the delivery of a campus-based inservice training program to personnel involved in the education of handicapped infants, toddlers and preschoolers in predominantly rural New Mexico. Results to date were also presented according to DEM

convention. Twenty-eight trainees representing 23 of New Mexico's 32 counties received five weeks of intensive didactic training and hands-on experience through the third year of the project and all agreed to provide follow-up in-service training in their home or contiguous counties upon request. Results to date indicate that the majority of trainees have provided this service and, in addition, have applied the new knowledge and skills in their own home programs.

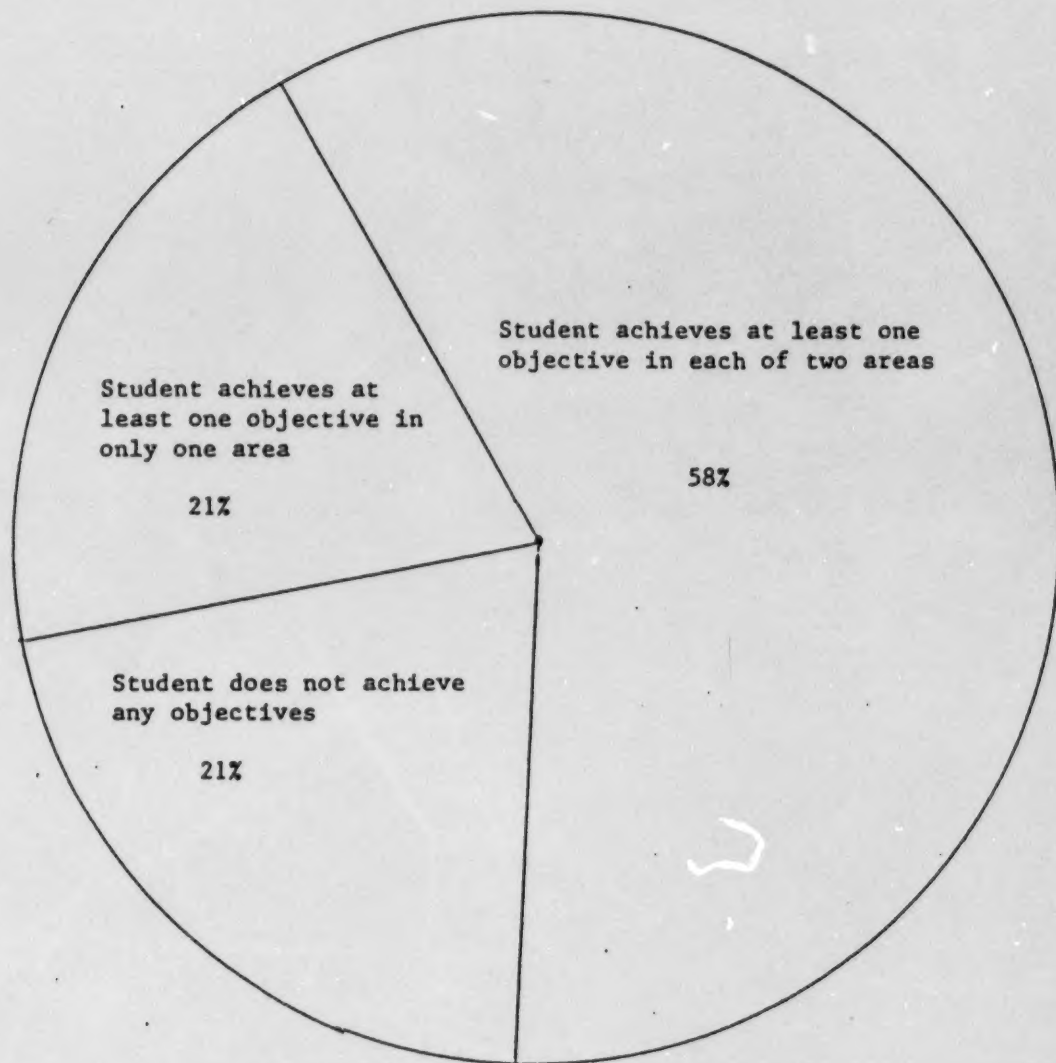


Figure 10. Proportions of Student Objective Attainment Year 81-82

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